

United States District Court,  
N.D. California, San Jose Division.

**DISPLAYLINK CORPORATION,**  
Plaintiffs.

v.  
**MAGIC CONTROL TECHNOLOGY CORPORATION,**  
Defendant.

No. CV-07-01998 RMW

**Nov. 10, 2008.**

**Background:** Competitor filed action seeking declaratory judgment that it did not infringe patent generally relating to device for converting digital display signals into analog display signals and that patent was invalid. Court set forth to construe disputed claims.

**Holdings:** The District Court, Ronald M. Whyte, J., held that:

- (1) term, "USB," was abbreviation for "Universal Serial Bus," which was computer standard technology described in Universal Serial Bus Specification Revision 2.0 and prior versions of that standard;
- (2) term "VGA," meant Video Graphics Array, the technology described in IBM Corporation, Personal System/2 Hardware Interface Technical Reference (1988 and as updated in 1991) and in IBM Personal System/2 and Personal Computer BIOS Interface Technical Reference (1991);
- (3) person of ordinary skill in the art reading patent at time that it was filed would have understood acronym, "VGA," to refer to specification set forth in VGA technical references of inventor of that technology, rather than including XGA and SVGA and other inventors' modifications of VGA technology;
- (4) phrase, "display device," meant electronic device for visually representing VGA signals;
- (5) phrase, "USB Controller," meant device that received universal serial bus (USB) display signal, held it until it received bus command, and then forwarded USB display signal out on first-in-first-out (FIFO) basis;
- (6) "VGA controller," was component or components that controlled routing of VGA signals pursuant to VGA standard;
- (7) "USB based display signals," were USB encoded display signals; and
- (8) phrase, "for receiving exclusively therethrough USB based display signals," meant that USB controller received all of USB display based signals.

Ordered accordingly.

James C. Yoon, for Plaintiff.

Richard F. Cauley, for Defendant.

**ORDER CONSTRUING CLAIMS OF UNITED STATES PATENT NO. 7,203,788**

**RONALD M. WHYTE, District Judge.**

On May 13, 2008, the court held a hearing for the purpose of construing disputed terms in the claims of United States Patent No. 7,203,788 ("the '788 patent"). After consideration of the arguments and evidence presented by the parties and the relevant portions of the record, the court construes the disputed terms as set forth below.

## I. BACKGROUND

Defendant Magic Control Technology Corporation ("MCT") is the owner of the '788 patent entitled "USB-to-VGA Converter." Plaintiff DisplayLink Corporation ("DisplayLink") filed the instant action on April 10, 2007, seeking a declaratory judgment that it does not infringe the '788 patent and that the '788 patent is invalid.

The invention of the '788 patent generally relates to a device for converting digital display signals into analog display signals. Specifically, the claimed device converts Universal Serial Bus ("USB") signals from a computer's USB port into Video Graphics Array ("VGA") signals for a monitor. The '788 patent contains 19 claims, all directed to a USB-to-VGA converter. Prior to the '788 patent, adding peripherals such as a second monitor to a computer was difficult because computers generally came with one internal video card with a single display port compatible with one monitor at a time. Additionally, VGA monitors were generally not configured to work with other ports such as USB or parallel ports. Thus, to add more monitors, a second internal video card was required. To add this second video card, disassembly, reassembly, and reconfiguration of the computer was necessary.

The invention of the '788 patent eliminated the need for internal video cards and the related hassle of installing and configuring them into a computer. By using the USB-to-VGA converter, an additional monitor could be installed by merely connecting the USB end of the adapter to a USB port and the VGA end to a monitor. In a very short time, a second monitor could become fully operational.

MCT and DisplayLink are competitors in the market for USB-to-VGA display adapters. DisplayLink asserts that it is in the business of designing and selling cutting edge display interface technology that uses digital network and bus interfaces to connect personal computers to displays. DisplayLink asserts that its adapter technology enables personal computers and laptops to connect to a display by a USB connection. DisplayLink asserts that MCT has indicated that it will assert its rights under the '788 patent against DisplayLink's products.

## II. LEGAL STANDARD

[1][2][3][4] Claim construction is exclusively within the province of the court. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 387, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). In determining the meaning of a disputed claim limitation, the intrinsic evidence including the claim language, written description, and prosecution history is the most significant. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed.Cir.2005). Words of a claim "are generally given their ordinary and customary meaning" as understood by a person of ordinary skill in the art. *Id.* at 1312-13. Claims are read in view of the specification, which is the "single best guide to the meaning of the disputed term." *Id.* at 1315. A court "should also consider the patent's prosecution history, if it is in evidence." *Id.* at 1317. Finally, although it is generally less significant than the intrinsic record, extrinsic evidence can "shed useful light on the relevant art." *Id.*

## III. DISCUSSION

DisplayLink and MCT dispute the meaning of several terms contained in the claims of the '788 patent, including: (a) "USB," (b) "VGA," (c) "display device," (d) "USB controller," (e) "VGA controller," (f) "USB based display signals," (g) "USB based display signals from the computer," (h) "for receiving exclusively

therethrough USB based display signals," (i) "bridge," (j) "connecting the USB controller and the VGA controller one to the other for the passage of data therebetween," and (k) "the bridge circuit converting the USB based display signals into corresponding VGA signals." Claim 1 of the '788 patent, one of two independent claims, is set forth below with the disputed terms highlighted in bold:

1. A **USB-to-VGA** converter interconnecting through a **USB** port of a computer a **display device** controlled the computer comprising:

a **USB controller** disposed external to the computer and adapted to detachably connect to a **USB** port of the computer **for receiving exclusively therethrough USB based display signals from the computer**, the **USB controller** issuing a bus control command;

a **VGA controller** disposed external to the computer and adapted to connect to the **display device** for conveying **VGA** signals to the **display device**; and

a **bridge** disposed external to the computer and **connecting the USB controller and the VGA controller one to the other for the passage of data therebetween**, the bridge receiving the bus control command and issuing a first-in-first-out control signal to the **USB controller** to receive the USB based display signals from the **USB controller** in a first-in-first-out manner, **the bridge circuit converting the USB based display signals into corresponding VGA signals** and forwarding the **VGA** signals to the VGA controller which in turn applies the **VGA** signals to the **display device**.

'788 patent 4 :57-5 :11.

#### A. USB (UNIVERSAL SERIAL BUS)

[5] The '788 patent specification states:

The present invention relates generally to a USB (Universal Serial Bus) to VGA (Video Graphics Array) converter, and in particular to a USB-to-VGA converter connectable between a USB port of a computer and a VGA display device.

Id. at 1:6-9. The parties dispute the meaning of "USB" and propose the following constructions:

Term	DisplayLink's proposed construction	MCT's proposed construction
USB	Universal Serial Bus, the technology described in the Universal Serial Bus Specification Revision 2.0 and its predecessor revisions.	USB has an ordinary and customary meaning to a person of ordinary skill in the art. USB generically refers to any serial bus specifications which support USB based display signals from the host computer and which are compatible with any USB port/plug.

MCT asserts that the term "USB" refers to any serial bus that supports USB and has a compatible USB port or plug. MCT asserts that a person of ordinary skill in the art would associate the term "USB" by its unique and characteristic plug. DisplayLink argues that the term "USB" as used in the patent refers to a specific standard rather than to any serial bus specification that is compatible with any USB port/plug. Additionally, DisplayLink asserts that that standard is Universal Bus Specification Revision 2.0 and any prior versions of that standard because these were the specifications that existed and were known at the time of the filing of the '788 patent.

[6][7] Claim terms should be construed based on how that claim term was understood by a person of ordinary skill in the art at the time of the invention. *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1338-39 (Fed.Cir.2005). The parties dispute whether a person of ordinary skill in the art FN1 would have understood at the time of the alleged invention that the term "USB" meant a technology utilizing a distinctive port/plug or a bus that complied with a particular industry standard. USB technology was developed in an effort to create a standardized universal port for connecting peripheral devices to a personal computer.FN2 Tr. at 18:21-24. Intel introduced the first version of USB, version 1.0, in 1995. *Id.* at 19:2-3. In 1999, Intel introduced a second USB version, version 1.1. *Id.* at 19:7-8. This technology was fast enough to run such peripherals as a keyboard, mouse, modem, or printer. *Id.* at 19:18-22. In April of 2000, Intel released USB 2.0, which had sufficient speed to run a monitor. *Id.* at 19:10-12. Thus, with USB 2.0, users were able to attach all of their peripherals to their PC using the standard USB interface. *Id.* at 19:24-20:8.

FN1. DisplayLink's expert, Alan H. Jones, Ph.D., asserts that a person of ordinary skill in the art as it relates to the '788 patent would have "at least (1) a degree in electrical engineering or computer science and (2) experience in hardware design, including (a) work on the concepts of timing, data throughput, and how the device will need to interact with the intended system and (b) implementing devices that comply with well-known industry standards such as the USB and VGA standards." Jones decl. at para. 23. MCT's expert, Paul S. Min, Ph.D., submits that a person of ordinary skill in the art would have "a minimum of Bachelor of Science degree in Electrical Engineering, Computer Science, or Computer Engineering, and one year experience in the electronics industry." Min decl. at para. 23. The court's construction of the terms in dispute does not depend on whose definition of a person of ordinary skill in the art is adopted. It does not appear that the proposed persons of ordinary skill would construe the disputed language differently.

FN2. As used herein, references to the "Tr. at \_\_\_\_" refer to page and line numbers of an uncertified transcript of the claim construction hearing held on May 13, 2008.

At the hearing, MCT's electrical engineering expert, Paul S. Min, Ph.D., agreed that the term "USB" is defined by an industry accepted standard. Tr. at 44:7-9. Further, Dr. Min agreed that if a person of ordinary skill in the art wanted to design a system that implemented the USB standard, he or she would turn to the most recent available USB standard. *Id.* at 44:14-17; 46:10-17. Currently, this standard is contained in the Universal Serial Bus Specification Revision 2.0. *Id.* at 19:10-12.

In its claim construction brief, MCT states that:

It is common for a computer system to be attached to peripheral devices such as inkjet and laser printers. These devices usually have a cable that attaches on one end of the computer. One way these devices connect to a computer is through a USB port on a the computer. The USB port and USB cable are built based upon an industry accepted USB standard. USB is generically understood in the field to refer to USB without any reference to particular versions of the standard.

MCT Br. 23-24. Thus, MCT itself recognizes that a person of ordinary skill in the art would understand the term "USB" to reference an industry accepted standard, not the shape of a port/plug. Accordingly, the court agrees with DisplayLink that the term "USB" refers to a type of serial bus that meets the requirements of the industry standard.

The parties also dispute whether the term "USB" as used in the '788 patent is limited to the technology described in the Universal Serial Bus Specification Revision 2.0 and its earlier versions.FN3 DisplayLink asserts that the term as used in the ' 788 patent must be limited to the 2.0 specification and any earlier

version because "[t]here is no way to know whether or not 'future' versions of the USB standard will [be] substantially similar to or substantially different from the versions that existed at the time of the '788 patent application was filed." DisplayLink Br. at 5.

FN3. The most current USB specification is version 2.0.

The '788 patent is silent as to a particular USB standard. However, a person of ordinary skill in the art understood USB to be the technology disclosed in the 2.0 specification (or the earlier versions) and what they would necessarily look to in order to design a USB compliant product. Dr. Min testified that in relation to the term "USB controller" the device communicated according to a USB standard. Asked what he meant by "USB standard," Dr. Min explained that at the time of filing the '788 patent specification, the latest available standard in 2001 (one year before the filing date of the '788 patent) "would have been what a person of ordinary skill in the art would look at" to determine what the USB standard meant. Min Dep. 106:21-107:9. The parties do not dispute that this standard was USB 2.0.

However, at the hearing the parties noted that USB 3.0 is set to be released in the near future. MCT seeks to have a construction that would cover this future version. Display Link objects. Since it is impossible to know what that standard specification will include, the question as to whether the patent will read on a serial bus using a future revision of the USB standard is not ripe for decision.

Accordingly, the court construes the term "USB" as follows:

"USB" is an abbreviation for "Universal Serial Bus," which is a computer standard technology described in Universal Serial Bus Specification Revision 2.0 and the prior versions of this standard. The court does not reach the issue of whether the term as used in the patent is compatible with possible future versions of the USB specification.FN4

FN4. A future USB standard could include revolutionary changes from 2.0 and thus not perform in the same or an equivalent way.

## **B. VGA (VIDEO GRAPHICS ARRAY)**

[8] The '788 patent treats the term "VGA" as an abbreviation for "Video Graphics Array":

The present invention relates generally to a USB (Universal Serial Bus) to VGA (Video Graphics Array) converter, and in particular to a USB-to-VGA converter connectable between a USB port of a computer and a VGA display device.

'788 patent at 1:6-9. The parties propose the following constructions:

<b>Term</b>	<b>DisplayLink's proposed construction</b>	<b>MCT's proposed construction</b>
VGA	Video Graphics Array, the technology described in IBM Corporation, Personal System/2 Hardware Interface Technical Reference (1988 and as updated in 1991) and in IBM Personal System/2 and Personal Computer BIOS Interface Technical Reference (1991).	VGA has an ordinary and customary meaning to a person of ordinary skill in the art. VGA generically refers to all video display standards compatible with any 15-pin VGA port/plug.

[9] Thus, the parties dispute whether the term "VGA" as used in the patent is a generic term that covers many forms of video display standards compatible with a distinctive port/plug or is a term that is defined by the VGA standard set forth by IBM.

VGA technology was developed by IBM in the late 1980s. Min decl. at para. 25. This technology allowed computer displays to offer better resolution, an increased color palette, and the ability to simultaneously display more colors than previous adaptors. Jones decl. at para. 11. Notably, the VGA standard has a resolution of 640-by-480. The details of the VGA graphics architecture are described in a series of Technical Reference Manuals published by IBM in 1988 and updated in 1991. Jones decl. at para. 10.

After the VGA standard was introduced by IBM in 1989, clone makers introduced into the market a video graphics array specification called super video graphics array or SVGA. In 1990, IBM introduced the eXtended graphics array or "XGA" video graphics array. Today there are many variations of video graphics array specifications on the market, including SXGA, UXGA, and QXGA. All of these video graphics array specifications utilize the 15 prong port/plug and the signals assigned to each of the pins in the connectors are the same as in the original VGA. Min decl. at para. 25. However, they differ in the speed of data transmission. According to Dr. Min, certain video graphics array standards are preferred to others. For example, SVGA is a popular graphics array standard. Tr. at 35:22-36:5; 54:4-9.

MCT asserts that because at the time of patenting, other video graphics array specifications existed, including SVGA and XGA, the patentee could not have meant for the term VGA to be limited to only VGA technology as described by the 1991 IBM specification. Rather, MCT asserts that VGA is a term that is used generically by persons of ordinary skill in the art to refer to any video graphic array standard that is compatible with the distinctive 15 prong plug/port. MCT asserts that the specific IBM VGA specification was considered sunset technology at the time of patenting and thus the term VGA must encompass more than the IBM VGA specification itself.

MCT asserts that the '788 patent specification supports its proposed construction. Specifically MCT points to the language in the specification that states: "The present invention relates *generally* to a USB (Universal Serial Bus) to VGA (Video Graphics Array) converter, and in particular a USB-to-VGA converter." '788 patent at. 1:6-9 (emphasis added). MCT asserts the term "VGA" is being used in the patent as a general term, meaning that the term is used generically, and not in relation to the specific VGA standard itself. However, "generally" as used in the patent is not modifying VGA but rather the converter. There is nothing in the specification or claims of the '788 patent that indicates or suggests that the term "VGA" is used generically. The specification and prosecution history do not mention the term "VGA" being compatible with other video graphics array standards, even though these standards were known by a person of ordinary skill in the art at the time the patent was filed.

MCT next asserts that the statement in the patent that the invention can work with any operating system is evidence that "VGA" is a term used generically to cover all video graphics arrays. Specifically, the '788 patent states: "[t]he operation process discussed herein is based on the WINDOWS operation system released by Microsoft Company, comprising the following steps ...." Id. at col.3:54-56. At the hearing, Dr. Min testified that as of December 2002, the filing date of the patent, the most current version of Windows available was Windows XP. Tr. at 40:16-19. Dr. Min further testified that Windows XP would not display the 640-by-480 resolution set forth in the IBM VGA standard. Thus, MCT asserts that the patent could not have contemplated limiting the term "VGA" to the standard using only the letters "VGA" as opposed to other standards such as SGVA. However, at the time the patent was filed, other Windows operating systems were known and in use including Windows 95, Windows 98, and Windows 2000. These operating systems would display VGA. Tr. at 88:6-12. The patent language quoted by MCT does not state which Windows operating system is being referenced.

The construction proposed by MCT is circular and, therefore, it is difficult to understand how it would practically be applied. It construes VGA to refer generically to "all video display standards compatible with any 15-pin VGA port/plug." (Emphasis added). In other words, MCT uses "VGA" to define "VGA."

DisplayLink asserts that MCT is trying to grossly expand the scope of its patent. DisplayLink asserts that a person of ordinary skill in the art would understand the term "VGA" to mean the 640-by-480 resolution as set forth in the IBM specifications for VGA. In response to MCT's argument that such a construction would limit the patent to sunset technology, DisplayLink asserts that this argument is irrelevant and that the patent discloses and claims what it claims, not what MCT wishes it to claim. Further, at the hearing, Dr. Min admitted that at the time the patent was filed in 2001, VGA was supported by virtually all personal computers. Tr. at 50:22-51:1. Additionally, DisplayLink notes that at the time the patent was filed, a person of ordinary skill in the art would have known about the SVGA and XGA standards and that these standards would not work on a VGA monitor. Tr. 51:24-52:5; 52:11-19; 53:22-25. Yet, notes DisplayLink, these standards were not even mentioned in the patent or prosecution history of the '788 patent.

DisplayLink notes that in the claims, VGA modifies "signals," "controller," and "plug." See '788 patent at 4:65-5:15. Thus, asserts DisplayLink, "VGA" must mean something more than a 15 prong plug/port. DisplayLink further notes that MCT's definition of "VGA controller" is a "device that communicates with a display device according to the VGA standard ...." Therefore, DisplayLink argues that MCT itself recognizes that the term "VGA" references a standard. Also, DisplayLink notes that Figure 6 in the specification shows an alternate embodiment of the invention. This embodiment does not contain a 15 prong port/plug. Thus, DisplayLink points out, MCT's proposed construction would not cover one of the embodiments of the patent.

DisplayLink notes that Figure 4 provides an illustration of how a host computer issues USB based display signals to a USB controller. Id. at 2:2-10. The patent describes the steps of how the host computer system transmits the USB display signal. Id. at 3:52-65. None of the steps detailed in the patent specification discuss compression. Tr. at 57:21-25. Further, the patent talks about transmitting USB signals directly from the host computer to the display device. '788 patent at 1:41-45. At the hearing, Dr. Min agreed that USB 2.0 could not support a XGA signal without compression and that the '788 patent does not mention any compression. Min depo., vol. 2 at 211:11-212:12, 225:5-7; see also Tr. 55:12-59:22. Specifically, Dr. Min testified:

Q. Now sir, a person of ordinary skill in the art at the time the '788 patent was filed would understand that USB 2.0 did not have the bandwidth sufficient to directly transmit the XGA signals without compression, correct?

A. That's right.

Q. And the patent is entitled USB to VGA converter, correct?

A. That is correct as well.

Q. And this patent does not teach how to transmit an XGA signal to a monitor; correct?

A. That is correct. I mean it doesn't really talk about XGA signal being specifically part of this transmission.

Tr. 58:7-20. Dr. Min further acknowledged that the patent does not teach or reference compression which would be necessary to transmit any of the signals other than VGA. Tr. 59:2-22. He explained that the bit rate demands for Super XGA, Ultra XGA, and Quad XGA are much higher than the bit rate demands of

XGA. Tr. at 59:9-12. Like XGA, Dr. Min agreed that those video graphics array standards could not be transmitted without compression. Tr. at 13-19. Thus, asserts DisplayLink, the '788 patent does not teach how to transmit any video graphics array signals except VGA.

The court on balance is persuaded that DisplayLink's construction should be adopted. It is undisputed that at the time the patent was filed XGA and SVGA were in existence. Several Windows operating systems available when the patent was filed supported VGA. The patent does not teach, give an example of or even mention a compression limitation which would be necessary in order to transmit signals for display other than VGA. The court, therefore, believes that a person of ordinary skill in the art reading the '788 patent at the time it was filed would have understood the term VGA to refer to the specification set forth in the IBM VGA technical references. This does not mean that products using other standards are not essentially identical or equivalent. But that seems more properly a question of infringement as opposed to one of claim construction.

[10] The court does recognize that a review of the intrinsic evidence and a consideration of Dr. Min's testimony about the state of the art at the time leaves unanswered the troubling question as to why the patent would claim an invention that only covered "sunset technology." However, even if the court found (which it does not) that the intrinsic evidence rendered the claim equally susceptible to a broader and narrower interpretation, the narrower interpretation should be adopted. *See Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335,1344 (Fed.Cir.1998) (pointing out that the applicant has the burden to particularly point out and distinctly claim the subject matter of the invention).

Accordingly, the court construes the term "VGA" as follows:

Video Graphics Array, the technology described in IBM Corporation, Personal System/2 Hardware Interface Technical Reference (1988 and as updated in 1991) and in IBM Personal System/2 and Personal Computer BIOS Interface Technical Reference (1991).

### C. DISPLAY DEVICE

[11] This term appears throughout the specification and the claims of the '788 patent. MCT argues that a display device converts electrical signals to images while DisplayLink argues that the display device as claimed in the '788 patent is limited to representing VGA signals. The parties propose the following constructions:

<b>Term</b>	<b>DisplayLink's proposed construction</b>	<b>MCT's proposed construction</b>
display device	Electronic device for visually representing VGA signals	Device that converts electrical signals to images

[12] Claims must be construed in the context of the invention. Phillips, 415 F.3d at 1314. All of the claims in the '788 patent refer to displaying VGA signals. For example, claim 1 states that a VGA controller is "connected to the display device for conveying VGA signals to the display device." '788 patent at 4:66-67. The specification states that "[t]he VGA controller in turn forwards the VGA signals to the display device for display by the display device." Id. at 2:38-40. Further, the specification notes that "an object of the present invention is to provide a USB-to-VGA converter which converts USB based display signals issued from a host computer into VGA signals that can be received and recognized by a display device whereby images to be displayed can be transmitted from the host computer in USB form." Id. at col.1:31-36. Thus, the patent claims and the specification only refer to the display device with respect to the display of VGA images. In the context of the '788 patent, the display device is a device used to display the VGA signals. Dr. Min confirmed this in his testimony:

Q. Regarding the display device, does the '788 patent disclose anything other than a VGA?

A. No.

Min depo. at 51:10-16.

DisplayLink appears to suggest in discussing its proposed construction that the display device can only display VGA images. There is no basis for limiting "display device" to one that can only display VGA images. It only must be able to display VGA images. The court's adoption of DisplayLink's proposed construction should not be construed to imply that a display device must exclusively display VGA images.

The court construes "display device" as follows:

"Display device" is an "electronic device for visually representing VGA signals."

#### D. USB CONTROLLER

[13] The USB controller of the '788 patent refers to the device positioned between the USB port of a host computer and the bridge of the USB-to-VGA converter. '788 patent Fig. 1. The parties propose the following constructions:

<b>Term</b>	<b>DisplayLink's proposed construction</b>	<b>MCT's proposed construction</b>
USB Controller	Component(s) that controls the receipt, storage, and routing of USB encoded data.	Device that communicates with the computer according to the USB standard and communicates with the bridge in the signal form understood by the bridge.

MCT argues that DisplayLink's construction introduces words "receipt, storage, and routing" of USB "encoded data" and those requirements are not supported by the specification or prosecution history. DisplayLink argues that MCT's proposed construction does not give any meaning to the claim term. Further, DisplayLink asserts that its proposed construction, including the terms "receipt, storage, and routing," is supported by the claims and the specification. DisplayLink argues that the USB controller is not a passive device that simply receives data and sends on signals. Rather, the USB controller is an active device that controls the receipt, storage, and routing of the USB encoded data.

Claim 1 of the '788 patent claims "a USB controller disposed external to the computer and adapted to detachably connect to a USB port of the computer for receiving exclusively therethrough USB based display signals from the computer, the USB controller issuing a bus command." Id. at 4:60-65. The '788 patent specification describes the USB controller as a device that is "connectable to a USB port 210 of a host computer 200 for receiving USB based display signals from the host computer 200." Id. at 2:27-29. The USB controller is connected to a bridge that receives USB based signals from the USB controller. Id. at 2:26-30. The specification states that the bridge contains a first-in-first-out ("FIFO") controller that "issues control instructions to the USB controller" to forward signals from the host computer to the FIFO controller. Id. at 2:54-59.

At the hearing, DisplayLink's counsel stated that the key dispute it has with MCT's proposed construction of the term is that MCT's proposed definition changes the controller function to a device that merely communicates. Tr. at 112:1-7. DisplayLink asserts that the controller is actually doing the control function. Tr. at 111:22-23. MCT indicated that its main objection to DisplayLink's proposed construction is

DisplayLink's inclusion of the term "encoded." Tr. at 112:17-19. In response to the parties' proposals, the court suggested that the term "USB controller" be construed as a device that receives a USB display signal, holds it until it receives a bus command, and then forwards the USB display signal out on a FIFO basis. The parties did not voice specific objection to this proposed construction. Tr. 112:1-23. The court believes that its proposal is consistent with the patent disclosure. Accordingly, the court construes the term "USB Controller" as follows:

"USB Controller" is a device that receives a USB display signal, holds it until it receives a bus command, and then forwards the USB display signal out on a FIFO basis.

### E. VGA CONTROLLER

[14] The VGA controller of the '788 patent refers to a device positioned between the bridge and the display device. '788 patent Fig. 1. The parties propose the following constructions:

<b>Term</b>	<b>DisplayLink's proposed construction</b>	<b>MCT's proposed construction</b>
VGA Controller	Component(s) that controls the routing of VGA signals pursuant to the VGA standard	Device that communicates with a display device according to the VGA standard and communicates with the bridge in the signal form understood by the bridge.

MCT asserts that its proposed construction is consistent with the intrinsic evidence and that DisplayLink's proposed construction improperly includes the term "routing," which MCT argues is not supported by the intrinsic evidence. Like "USB Controller" discussed above, DisplayLink asserts that the VGA controller does more than merely communicate with the bridge and the display device; it controls the routing of VGA signals to the display device.

Claim 1 of the '788 patent claims "a VGA controller disposed external to the computer and adapted to connect to the display device for conveying VGA signals to the display device." Id. at 4:65-67. Claim 1 further provides that the VGA controller receives signals from the bridge and "in turn applies the VGA signals to the display device." Id. at 5:10-11. The specification of the '788 patent states that the "[t]he VGA controller is connectable to a display device 300 whereby the USBto-VGA converter 100 provides a signal conversion and connection between the host computer 200 and the display device 300." Id. at 2:29-32. The specification additionally states that "[t]he VGA controller [after receiving VGA signals] forwards the VGA signals to the display device 300 for display by the display device." Id. at 2:38-40. Thus, the claim language and the specification support DisplayLink's proposed construction that the "VGA controller" controls the routing of VGA signals to the display device. Accordingly, the court construes the term "VGA controller" as follows:

A "VGA controller" is a component or components that control the routing of VGA signals pursuant to the VGA standard.

### F. USB BASED DISPLAY SIGNALS

[15] The parties propose the following constructions of the term "USB based display signals":

<b>Term</b>	<b>DisplayLink's proposed construction</b>	<b>MCT's proposed construction</b>
USB based display signals	USB encoded display signals	USB signals containing display information

The parties dispute, to the extent the court understands the distinctions made by the parties, is whether USB based display signals include USB signals that merely contain some display information (MCT's position) or whether the display signal itself must be in a USB encoded format (DisplayLink's position).

The plain language of the claims suggests that USB based display signals are USB encoded.FN5 To interpret USB based signals as referring to any USB signal containing display information would seem to read "based" out of the term being construed. Both parties' experts appear to agree that USB display base signals are USB encoded. Jones decl. at para.para. 45-46; Min depo. at 162:2-14.

FN5. "Encoded" means a sequence of characters have been put into a special format.

MCT argues that USB based display signals may include such control or packet information as required by the USB standard. DisplayLink does not disagree to the extent the USB standards requires certain control or protocol information, such information would be included in USB based display signals. The court construes USB based display signals as follows:

"USB based display signals" are USB encoded display signals.

**G. USB BASED DISPLAY SIGNALS FROM THE COMPUTER**

The parties dispute what the addition of the words "from the computer" to the term "USB Based Display Signals" requires. The parties propose the following constructions:

Term	DisplayLink's proposed construction	MCT's proposed construction
USB based display signals from the computer	Indefinite under 35 U.S.C. s. 112, para. 2 or, in the alternative, USB encoded display signals representing the image rendered by the computer.	USB signals containing display information from the computer

[16] The court has difficulty grasping the significance of the parties' dispute concerning the meaning of the phrase "from the computer." FN6 DisplayLink asserts that "from the computer" means that the image must be generated by the computer, not an intermediate device. Tr. at 124:4-13. However, the court has no understanding of what an intermediate device would be or if DisplayLink believes its product utilizes an intermediate device. MCT submits that "from the computer" needs no construction. Based upon the court's current understanding of the technology, the court agrees that the language "from the computer" needs no further construction. Claim 1 provides that the USB controller receives USB based display signals "from the computer." That language has a plain and ordinary meaning that cannot be further clarified, at least at this time, by some construction. Therefore the court elects not to define "from the computer" further.

FN6. This dispute over the meaning of claim language points out the advantage of combining claim construction with motions for summary judgment that depend on the court's claim construction. "While a trial court should certainly not prejudge the ultimate infringement analysis by construing claims with an aim to include or exclude an accused product or process, knowledge of that product or process provides meaningful context for the first step of the infringement analysis, claim construction." Wilson Sporting Goods Co. v. Hillerich & Bradsby Co., 442 F.3d 1322, 1326-7 (Fed.Cir.2006). Here, the court lacks an understanding of the context of the dispute regarding the language "from the computer." In other words, the court has no appreciation for the reason, if any, that the dispute makes a difference and thus is concerned that if it construes "from the computer" to mean "generated by the computer," it may create an unintended dispute as to the meaning of "from the computer" or be providing an advisory opinion on a construction

issue that is not ripe for resolution.

## H. FOR RECEIVING EXCLUSIVELY THERETHROUGH USB BASED DISPLAY SIGNALS

[17] Claim 1 of the '788 patent requires that the USB controller be "detachably connected to a USB port of the computer **for receiving exclusively therethrough USB based display signals** from the computer...." (emphasis added). The parties propose the following constructions for the highlighted language:

Term	DisplayLink's proposed construction	MCT's proposed construction
For receiving exclusively therethrough USB based display signals	Indefinite under 35 U.S.C. s. 112, para. 2 or, in the alternative, For receiving only USB based display signals into the USB controller	For receiving all of the USB signals containing display information and forwarding them to the bridge in the signal form understood by the bridge

MCT asserts that the term "receiving exclusively therethrough" refers to the process whereby display signals are sent by the USB port of the computer "exclusively" to the USB controller and not another structure. However, MCT contends nothing in the intrinsic evidence limits the USB controller from receiving information other than display signals. DisplayLink asserts that the term means that the USB controller can receive only USB based display signals and nothing more. Thus, the parties agree that all USB based display signals emanating from the computer must pass through the USB controller. However, the parties do not agree on whether the USB controller can receive signals other than USB based display signals.

DisplayLink supports its position by pointing out that during prosecution of the '788 patent, in March 2006, MCT amended claim 1 in response to an interview with the PTO examiner by replacing "for receiving USB based display signals" with "for receiving exclusively therethrough USB based display signals." Jones decl. para. 59. However, MCT correctly observes that the amendment was made to clarify the scope of claims 1 and 19 such that the "converter includes among its combination of features that of a USB controller 'external to the computer' which 'detachably' connects to the computer's USB port for 'receiving exclusively therethrough' the 'USB based display signals from the computer.'" Id. Thus, this amendment appears to have been intended to clarify that all USB display signals are received by the USB controller to the exclusion of any other controller or device, not that only USB display signals are received by the USB controller to the exclusion of any other type of signal.

DisplayLink also argues that its position is supported by the '788 patent specification which states that "an object of the present invention is to provide a USB-to-VGA converter which converts USB based display signals from a host computer into VGA signals that can be received and recognized by a display device whereby image to be displayed can be transmitted from the host computer in USB form." '788 patent at 1:31-36. In addition, the specification states that a "further object of the present invention is to provide a USB-to-VGA converter that allows for direct transmission of USB signals from a host computer to a display device without adding any display interface card inside the host computer." Id. at 1:41-45. The abstract of the invention states "[a] USB-to-VGA converter includes a USB controller connectable to a USB port of a computer for receiving USB based display signals from the computer ...." Id. at Abstract. And finally, DisplayLink points to the specification language that "[t]he USB controller (10) is connectable to a USB port (210) of a host computer for receiving USB based display signals from the host computer (200)." Id. at 2:6-29.

The citations from the specification support the fact that the USB controller is the device that receives the USB based display signals to the exclusion of any other device. But they are not inconsistent with the USB controller's receipt of signals other than display based signals. For these reasons, the court construes the

phrase "for receiving exclusively therethrough USB based display signals" as follows:

"for receiving exclusively therethrough USB based display signals" means that the USB controller receives all of the USB display based signals

## I. BRIDGE

[18] This term "bridge" appears throughout the claims and specification of the '788 patent. The parties propose the following constructions:

<b>Term</b>	<b>DisplayLink's proposed construction</b>	<b>MCT's proposed construction</b>
Bridge	Component(s) for communicating between two or more buses each using different interface standards.	Device that converts electrical signals between different domains in the form understood by the receiving domains, through which each signal travels over a fixed path.

MCT asserts that there is no support in the patent for DisplayLink's proposed construction that a bridge is a device used to communicate between two buses. DisplayLink asserts that MCT's proposed construction is not necessarily wrong but that it lacks clarity.

Claim 1 of the '788 patent claims

a bridge disposed external to the computer and connecting the USB controller and the VGA controller one to the other for the passage of the data therebetween, the bridge receiving the bus control command and issuing a first-in-first-out control signal to the USB controller to receive the USB based display signals from the USB controller in a first-in-first-out manner, the bridge circuit converting the USB based display signals into corresponding VGA signals and forwarding the VGA signals to the VGA controller which in turn applies the VGA signals to the display device.

Id. at 5:1-11; *see id.* at 6:45-56. Thus, the function of the bridge is to convert USB based display signals into corresponding VGA signals. Figure 1 of the specification shows the bridge being between the VGA controller and the USB controller. The specification states that "[t]he bridge that is connected between the USB controller and the VGA controller receives the USB based display signals from the USB controller in a first-in-first-out (FIFO) manner and converts the USB based display signals into corresponding standard VGA signals ...." Id. at 2:33-36. Thus, as the claim states and the specification supports, the bridge receives a "bus control command." Id. at 5:1-11.

Further, while the claims do not specifically state that the bridge connects to a second bus that exists between the bridge and the VGA controller, Figure 2 of the patent shows the bridge connecting to the VGA controller via a PCI or AGP bus. Additionally, the patent specification states that "Fig. 2 is a block diagram of a bridge circuit of the USB-to-VGA converter of the present invention." Id. at 2:4-5. Thus, the specification confirms that the bridge also connects to a second bus. Accordingly, the court adopts DisplayLink's proposed definition and construes the term "bridge" as follows:

Component(s) for communicating between two or more buses each using different interface standards.

## J. CONNECTING THE USB CONTROLLER AND THE VGA CONTROLLER ONE TO THE OTHER FOR THE PASSAGE OF DATA THEREBETWEEN

[19] The parties propose the following constructions of the language "connecting the USB controller and the VGA controller one to the other for the passage of data therebetween":

<b>Term</b>	<b>DisplayLink's proposed construction</b>	<b>MCT's proposed construction</b>
connecting the USB controller and the VGA controller one to the other for the passage of data therebetween	connecting the USB controller to the VGA controller such that the VGA controller can receive video data only from the USB controller via the bridge	connecting the USB controller to the VGA controller to exchange electrical signals

The parties dispute what type of data is being sent between the USB controller and the VGA controller. MCT asserts that the type of data is not limited to only video data but rather is simply electrical signals. DisplayLink asserts that the data is video data only. DisplayLink argues that the clear language of the claim requires the passage of "video data" not electrical signals as MCT contends.

The express wording of the claims requires the passage of data. '788 patent at 5:1-11. Claim 1 requires that the USB controller receive USB based display signals from the computer. Id. at 4:60-64. Claim 1 further requires that the bridge convert the USB based display signals into VGA signals and then forward such signals to the VGA controller. Id. at 5:1-11. Thus, the claim by clear and ordinary language requires the passage of display data.

The patent specification notes that the invention is directed to a USB-to-VGA converter where the "image to be displayed can be transmitted from the host computer in USB form." Id. at 1:31-36. Accordingly, the court construes the limitation as follows:

"connecting the USB controller and the VGA controller one to the other for the passage of data therebetween" refers to connecting the USB controller to the VGA controller for the passage of display data.

### **K. THE BRIDGE CIRCUIT CONVERTING THE USB BASED DISPLAY SIGNALS INTO CORRESPONDING VGA SIGNALS**

[20] The parties propose the following constructions of the language "the bridge circuit converting the USB based display signals into corresponding VGA signals":

<b>Term</b>	<b>DisplayLink's proposed construction</b>	<b>MCT's proposed construction</b>
the bridge circuit converting the USB based display signals into corresponding VGA signals	the bridge circuit converting the USB based display signals into PCI type or AGP type, or equivalent bus topology, encoded display signals for passage to the VGA controller	the bridge circuit translating the USB signals containing display information into corresponding display signals according to the VGA standard.

MCT argues that its proposed claim construction is based on the claim language itself. MCT asserts that DisplayLink's proposed construction seeks to limit the claim term to a preferred embodiment of the '788 patent. DisplayLink argues that MCT's proposed construction is incorrect because USB based display signals, as discussed above, are not properly defined as USB signals containing display information but are USB encoded display signals.

Claim 1 of the '788 patent claims "the bridge circuit converting the USB based display signals and forwarding the VGA signals to the VGA controller ...." Id. at 5:7-9. The patent specification states that the

VGA signals "can be of PCI type or AGP type, **but is not limited thereto.**" Id. at 2:52-53 (emphasis added). DisplayLink's proposed construction seeks to limit the claim to a preferred embodiment. However, as noted above, the bridge receives USB based display signals. Accordingly, the court construes the limitation as follows:

"the bridge circuit converting the USB based display signals into corresponding VGA signals" refers to the bridge circuit translating the USB based display signals into corresponding display signals according to the VGA standard.

#### IV. ORDER

For the foregoing reasons, the court construes the disputed claim language as follows:

Disputed Language	Court's Construction
USB	"USB" is an abbreviation for "Universal Serial Bus," which is a computer standard technology described in Universal Serial Bus Specification Revision 2.0 and the prior versions of this standard. The court does not reach the issue of whether the term as used in the patent is compatible with possible future versions of the USB specification.
VGA	"VGA" is an abbreviation for "Video Graphics Array," the technology described in IBM Corporation, Personal System/2 Hardware Interface Technical Reference (1988 and as updated in 1991) and in IBM Personal System/2 and Personal Computer BIOS Interface Technical Reference (1991).
display device	A "display device" is an electronic device for visually representing VGA signals.
USB controller	A "USB controller" is a device that communicates with the computer according to the USB standard and communicates with the bridge in the signal form understood by the bridge.
VGA controller	A "VGA controller" is a device that communicates with a display device according to the VGA standard and communicates with the bridge in the signal form understood by the bridge.
USB based display signals	"USB based display signals" are USB encoded display signals.
"from the computer"	No construction necessary
"for receiving exclusively therethrough USB based display signals"	"for receiving exclusively therethrough USB based display signals" means that the USB controller receives all of the USB display based signals
bridge	A "bridge" is a component or components for communicating between two or more buses each using different interface standards.
"connecting the USB controller and the VGA, controller one to the other for the passage of data therebetween"	"connecting the USB controller and the VGA controller one to the other for the passage of data therebetween" refers to connecting the USB controller to the VGA controller for the passage of display data
"the bridge circuit converting the USB based display signals into corresponding VGA signals"	"the bridge circuit converting the USB based display signals into corresponding VGA signals" refers to the bridge circuit translating the USB based display signals into

N.D.Cal.,2008.

Displaylink Corp. v. Magic Control Technology Corp.

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